

similar to those of *A. linearifolia*, but the involucre is very different.—  
JOHN M. COULTER AND J. N. ROSE.

Anæsthetics and Transpiration.—Mr. C. P. Lommen finds that Jumelle's results regarding the influence of anæsthetics upon transpiration in green plants may be obtained quantitatively by the simple method of weighing on the analytical balance at intervals of a few hours. Sprigs of *Selaginella rupestris* Spring, were employed in a series of experiments, and the percentage of water lost under glass in darkness and in light, with and without ether, corresponded with Jumelle's general results as chronicled in the *Revue Generale de Botanique*, October, 1890. This affords a very simple and easy method of demonstrating the relation between transpiration and assimilation.—CONWAY MACMILLAN, *University of Minnesota*.

---

### EDITORIAL.

Most advanced college students now-a-days are expected to secure some personal freedom of judgment by the independent investigation of a suitable subject. The larger part of such efforts do not rise to the plane of an addition to recorded knowledge, but serve at the time to assist the student in his mental development. A strong student with the necessary preliminary training, however, may do work of scientific value, if it is properly planned and directed by the teacher in charge. But whether of value or not from the scientific point of view, if reasonable success is attained the work must be well outlined at the start, and to do this often taxes the teacher's resources. If he is interested in mycology, the natural tendency is to turn students into that line of work, if in embryological development, into that work, and so on. This secures the best assistance from the teacher, but does not always bring to light the pupil's special talents or aptitude where he is most likely to excel. An inability to successfully manage the delicate manipulations required for high class histological work, stands in the way of fair success for many students, and for several years past our laboratories have chiefly cultivated this field of research. The work outlined for the student should be adapted not only to his knowledge and maturity of judgment, but to his skill as a manipulator, and to do this the selection must be made through a wide range of topics. There is a field of research of absorbing interest, crowded with unsolved problems, and in which the use of the microscope can be largely dispensed with, hitherto much overlooked, and that is the physiology of movement in plants. The changes in position of leaves, stems and roots due to gravitation, heat, light,

moisture and various internal agencies, and other similar subjects possess all the elements required for a good thesis. There are excellent grounds for the belief that vegetable physiology will soon claim as much attention from American universities as minute anatomy did a short time since. At any rate, here is a field to be kept in mind in deciding upon themes for independent investigation.

---

## CURRENT LITERATURE.

### A General Treatise upon Fungi.

The fungi have presented many obstacles to a satisfactory treatment within the compass of a single volume, among which are the very large number of diversified forms ranging through a long and intricate series, the obscure polymorphic nature of many of the species, the much reduced structure and curtailed life cycle due to dependence upon organic food supply, and imperfect knowledge of physiological and biological phenomena. Of the several divisions of the subject, systematic, morphological, biological and physiological, we have had more or less well written general accounts of each, decreasing in number and importance in the order named, except of the last. For a knowledge of the physiology of fungi the student has been obliged to hunt up the scattered papers in journals and society proceedings, and incidental references in works upon other subjects. A treatise, therefore, which gives a satisfactory survey of the whole subject of fungi, with the several parts duly apportioned, can not but meet with hearty welcome. Such a work is Zopf's recently published volume on the fungi in their morphological, physiological, biological and systematical relations.<sup>1</sup> The author is well known by his able works upon the lower forms of life and by his numerous important researches.

Of the 500 pages in the volume 115 are devoted to morphology, 110 to physiology, 56 to biology and 204 to classification and development. Upon opening to the first page one finds that the author proposes to include in the work only the true fungi (Eumycetes), and to exclude the bacteria (Schizomycetes) upon morphological grounds as well as of expediency. No mention is made of the slime-molds (Myxomycetes) except in a footnote where they are said to be animals and not plants. The author has given much attention to these outlying groups of organisms and published several monographs upon them, and their

---

<sup>1</sup>ZOPF, WILHELM.—Die Pilze in morphologischer, physiologischer, biologischer und systematischer Beziehung. pp. xii, 500. figs. 163. Roy. 8 vo. Breslau, Ed. Trewendt: 1890.—M. 18.